Remarks

Claims 1-18 are pending in the application. Claims 1, 6-8, 10-12 and 14-17 have been amended. Reconsideration and re-examination of the application is respectfully requested for the reasons set forth herein.

1. The Examiner has objected to claim 15, because claim 15 depends from a method claim but recites limitations drawn towards an electrical cable. Claim 15 has been amended to be drawn from the method of claim 14. In view the amendment, removal of the objection to claim 15 is respectfully requested.

2. The Examiner has rejected claims 16-18 under 35 U.S.C. 102(e) as being anticipated by Beaman et al. (US Patent No. 6,380,485).

In regard to claim 16, the Examiner stated that Beaman et al. discloses an electrical cable terminal part comprising an electrical cable 10 having a signal drain wire 15 and differential transmission signal wires 13, 14 with a differential impedance. The electrical cable 10 has a stripped end 11, 12 that exposes an outer surface of the wires. A tube 16 is positioned over a portion of the electrical cable 10 and a portion of the outer surface of the wires 13, 14, 15 that maintains the differential impedance of the wires 13, 14, 15 having an exposed outer surface.

Beaman et al. does not teach all of the elements of claim 16. Claim 16 states that an electrical cable has a single drain wire and differential transmission signal wires with a differential impedance, and a stripped end exposing an outer surface of the wires, and a tube positioned over a portion of the electrical cable and a portion of the outer surface of the wires that maintains the differential impedance of the wires having an exposed outer surface. Beaman

et al. teaches a twinax wire 40 comprising two parallel copper signal wires 41, 42, a bare copper wire or drain wire 46 located between the two insulated signal conductors 41, 42, and a thin metalized shield 45 surrounding the two parallel copper signal conductors 41, 42 and the drain wire 46. A portion of the metalized shield 45 of the twinax wire 40 is stripped to expose the drain wire 46 and insulation 43, 44 covering the two copper signal wires 41, 42. A metal termination clip 50 is attached to the twinax wire 40. The termination clip 50 has a slot 51 for receiving the stripped drain wire 46 at a right angle to the axis of the stripped copper signal wires 41, 42. Because the metalized shield 45 must be stripped from the wires 41, 42, 46 to expose the outer surface of the wires 41, 42, 46 that is to be covered by the tube, the metalized shield 45 can not act as a tube positioned over an outer surface of the stripped wires 41, 42, 46. Further, the termination clip 50 does not act as a tube that maintains the same differential impedence of the exposed wires 41, 42, 46 as the wires 41, 42, 46 in the metalized shield 45, because the termination clip 50 positions the stripped drain wire 46 at a right angle to the stripped signal wires 41, 42 immediately after the drain wire 46 is exposed from the metalized shield 45. Beaman et al., therefore, does not teach all of the elements of claim 16. Removal of the rejection of claim 16 under 35 U.S.C. 102(e) is respectfully requested.

Claims 17 and 18 depend from independent claim 16. As previously discussed, Beaman et al. does not teach all of the elements of claim 16. Because Beaman et al. does not teach all of the elements of claim 16, Beaman et al. does not teach all of the elements of claims 17 and 18. Removal of the rejection of claims 17 and 18 under 35 U.S.C. 102(e) is respectfully requested.

2. The Examiner has rejected claims 1-15 under 35 U.S.C. 103(a) as being unpatentable over Beaman et al. (US Patent No. 6,380,485 B1) in view of Selmeski (US Patent No. 5,371,322).

In regard to claims 1-5 and 7-13, the Examiner stated that Beaman et al. discloses an electrical cable terminal part comprising an electrical cable 10 having a signal drain wire 15 and differential transmission signal wires 13, 14 with a differential impedance. The electrical cable 10 has a stripped end 11, 12 that exposes an outer surface of the wires. A tube 16 is positioned over a portion of the electrical cable 10 and a portion of the outer surface of the wires 13, 14, 15 that maintains the differential impedance of the wires 13, 14, 15 having an exposed outer surface. Beaman et al., however, does not disclose the tubing being a heat-shrink tube covering. The Examiner further stated that Selmeski teaches a heat-shrink tubing for securing wires together. The Examiner, therefore, concluded that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the tubing of Beaman et al. with a heat-shrink tube as taught by Selmeski to secure the wires together more tightly.

The Examiner has failed to set forth a prima facie case of obviousness because the combination of Beaman et al. in view of Selmeski neither teaches nor suggests all of the elements of claim 1, nor teaches the problem or the source of the problem solved by the Applicant's invention.

The combination of Beaman et al. in view of Selmeski fails to teach or suggest all of the elements of claim 1. Claim 1 contains the claim limitations that the electrical cable comprises a shielding covering that surrounds the differential transmission signal wires and the drain wire, an exposed area formed by stripping the shielding covering around the two differential transmission signal wires and the drain wire at a terminal part of the electrical cable, a heat-shrink tube

covering a portion of the shielding covering and exposed area, except for a front end portion of the differential transmission signal wires and the drain wire, so that the equal distances between the differential transmission signal wires and the drain wire inside the shielding covering are maintained in the exposed area by the heat-shrink tube. Beaman et al. teaches a twinax wire 40 comprising two parallel copper signal wires 41, 42, a bare copper wire or drain wire 46 located between the two insulated signal conductors 41, 42, and a thin metalized shield 45 surrounding the two parallel copper signal conductors 41, 42 and the drain wire 46. A portion of the metalized shield 45 of the twinax wire 40 is stripped to expose the drain wire 46 and insulation 43, 44 covering the two copper signal wires 41, 42. A metal termination clip 50 is attached to the twinax wire 40. The termination clip 50 has a slot 51 for receiving the stripped drain wire 46 at a right angle to the axis of the stripped copper signal wires 41, 42. Because the metalized shield 45 is a shielding covering that must be stripped from the wires 41, 42, 46 to expose the outer surface of the wires 41, 42, 46 that is to be covered by the heat-shrink tube, the metalized shield 45 can not act as a heat-shrink tube that is positioned over an outer surface of the stripped wires 41, 42, 46 and a portion of the shielding covering. Further, the termination clip 50 does not act as a tube that maintains the same differential impedence of the exposed wires 41, 42, 46 as the wires 41, 42, 46 in the metalized shield 45, because the termination clip 50 positions the stripped drain wire 46 at a right angle to the stripped signal wires 41, 42 immediately after the drain wire 46 is exposed from the metalized shield 45. Because Beaman et al. does not teach all of the claim limitations of claim 1, except the tubing being a heat-shrink tube, the combination of Beaman et al. in view of Selmeski does not teach or suggest all of the elements of claim 1.

The combination of Beaman et al. in view of Selmeski fails to teach the problem or the source of the problem solved by the Applicant's invention. The Applicant's description states

that in conventional methods, the individual differential transmission signal wires and the drain wire from which a shielding covering has been stripped are generally connected to a corresponding circuit board, etc., in a loose state, i.e., in a state in which the positional relationship (impedence matching) of the wires is not maintained proximate the termination point. The Applicant's invention proposes using a tube, such as a heat-shrink tube, to maintain the positional relationship (impedence matching) of the differential transmission signal wires and the drain wire to a position proximate termination by placing a heat-shrink tube over the stripped portion of the wires that maintains the positional relationship (impedence matching) that the differential transmission signal wires and the drain wire had before being stripped. Beaman et al. teaches positioning a stripped portion of a drain wire 15 at a right angle to stripped ends of two parallel copper signal wires 11, 12 with and without the use of a metal termination clip 50. Selmeski teaches a heat-shrink tube 16 used to secure first and second wires 14, 15 together. Neither references teaches using a heat-shrink tube to maintain the positional relationship (impedence matching) of the differential transmission signal wires and the drain wire between the non-stripped portion and the termination point. The combination of Beaman et al. in view of Selmeski, therefore, fails to teach the problem or the source of the problem solved by the Applicant's invention.

The combination of Beaman et al. in view of Selmeski neither teaches nor suggests all of the elements of claim 1, nor teaches the problem or the source of the problem solved by the Applicant's invention. Because the Examiner failed to set forth a prima facie case of obviousness, removal of the rejection of claim 1 is respectfully requested.

Claims 2-5 and 7-13 depend from independent claim 1. As previously discussed, the combination of Beaman et al. in view of Selmeski neither teaches nor suggests all of the

elements of claim 1, nor teaches the problem or the source of the problem solved by the Applicant's invention. The combination of Beaman et al. in view of Selmeski, therefore, neither teaches nor suggests all of the elements of claims 2-5 and 7-13, nor teaches the problem or the source of the problem solved by the Applicant's invention. Because the Examiner failed to set forth a prima facie case of obviousness, removal of the rejection of claims 2-5 and 7-13 is respectfully requested.

In regard to claims 6 and 14-15, the Examiner stated that the method is inherent to the device.

The Examiner has failed to set forth a prima facie case of obviousness because the combination of Beaman et al. in view of Selmeski neither teaches nor suggests all of the elements of claim 6, nor teaches the problem or the source of the problem solved by the Applicant's invention.

The combination of Beaman et al. in view of Selmeski fails to teach or suggest all of the elements of claim 6. Claim 6 contains the claim limitations that the method for terminating an electrical cable comprises stripping a shielding covering over a given length from an end portion of two differential transmission signal wires and a drain wire at a terminal part of the electrical cable and covering an area around the two differential transmission signal wires and the drain wire that are exposed by stripping with a heat-shrink tube to maintain the drain wire at an equal distance from the two differential transmission signal wires to maintain impedence of the stripped wires. Beaman et al. teaches stripping a portion of a metalized shield 45 of a twinax wire 40 to expose a drain wire 46 and insulation 43, 44 covering two copper signal wires 41, 42 and placing a termination clip 50 about the twinax wire 40 so that the stripped drain wire 46 is

received in a slot 51 of the termination clip 50 at a right angle from the stripped signal wires 41, 42. Because the metalized shield 45 is a shielding covering that must be stripped from the wires 41, 42, 46 to expose the outer surface of the wires 41, 42, 46 that is to be covered by the heat-shrink tube, the metalized shield 16 can not cover the surface of the wires 41, 42, 46 exposed by stripping to maintain impedence of the stripped wires. Further, the termination clip 50 does not act as a tube that maintains the same differential impedence of the exposed wires 41, 42, 46 as the wires 41, 42, 46 in the metalized shield 45, because the termination clip 50 positions the stripped drain wire 46 at a right angle to the stripped signal wires 41, 42 immediately after the drain wire 46 is exposed from the metalized shield 45. Because Beaman et al. does not teach all of the claim limitations of claim 6, except the tubing being a heat-shrink tube, the combination of Beaman et al. in view of Selmeski does not teach or suggest all of the elements of claim 6. Because the Examiner failed to set forth a prima facie case of obviousness, removal of the rejection of claim 6 is respectfully requested.

The combination of Beaman et al. in view of Selmeski fails to teach the problem or the source of the problem solved by the Applicant's invention. The Applicant's description states that in conventional methods, the individual differential transmission signal wires and the drain wire from which a shielding covering has been stripped are generally connected to a corresponding circuit board, etc., in a loose state, i.e., in a state in which the positional relationship (impedence matching) of the wires is not maintained proximate the termination point. The Applicant's invention proposes using a tube, such as a heat-shrink tube, to maintain the positional relationship (impedence matching) of the differential transmission signal wires and the drain wire to a position proximate termination by placing a heat-shrink tube over the stripped portion of the wires that maintains the positional relationship (impedence matching) that the

differential transmission signal wires and the drain wire had before being stripped. Beaman et al. teaches positioning a stripped portion of a drain wire 15 at a right angle to stripped ends of two parallel copper signal wires 11, 12 with and without the use of a metal termination clip 50. Selmeski teaches a heat-shrink tube 16 used to secure first and second wires 14, 15 together. Neither references teaches using a heat-shrink tube to maintain the positional relationship (impedence matching) of the differential transmission signal wires and the drain wire between the non-stripped portion and the termination point. The combination of Beaman et al. in view of Selmeski, therefore, fails to teach the problem or the source of the problem solved by the Applicant's invention.

The combination of Beaman et al. in view of Selmeski neither teaches nor suggests all of the elements of claim 6, nor teaches the problem or the source of the problem solved by the Applicant's invention. Because the Examiner failed to set forth a prima facie case of obviousness, removal of the rejection of claim 6 is respectfully requested.

Claims 14-15 depend from independent claim 6. As previously discussed, the combination of Beaman et al. in view of Selmeski neither teaches nor suggests all of the elements of claim 6, nor teaches the problem or the source of the problem solved by the Applicant's invention. The combination of Beaman et al. in view of Selmeski, therefore, neither teaches nor suggests all of the elements of claims14-15, nor teaches the problem or the source of the problem solved by the Applicant's invention. Because the Examiner failed to set forth a prima facie case of obviousness, removal of the rejection of claims 14-15 is respectfully requested.

3. Claims 1, 6-8, 10-12 and 14-17 have been amended to correct typographical errors and antecedent basis. Approval by the Examiner of these corrections is respectfully requested.

4. It has been discovered that the proposed drawing correction of Figure 2 that was to be submitted with corrections shown in red in response to the Initial Office Action mailed July 5, 2003 were not enclosed in the Response dated September 27, 2002. Three copies of the proposed drawing corrections of Figure 2 with corrections shown in red have been enclosed. Upon approval by the Examiner, a replacement formal drawing of Figure 2 will be submitted.

In view of the arguments and amendments presented herein, the application is considered to be in condition for allowance. Reconsideration and passage to issue is respectfully requested.

Please charge any additional fees associated with this application to Deposit Order Account No. 501581.

Respectfully submitted,

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Version with Markings to Show Changes Made

1. (Twice Amended) An electrical cable for termination with an electrical component, the electrical cable comprising:

two differential transmission signal wires having respective core wires each with an outer insulating covering;

a [signal] single drain wire disposed adjacent to the differential transmission signal wires at an equal distance from each of the differential transmission signal wires;

a shielding covering that surrounds the differential transmission signal wires and [single] the drain wire;

an exposed area formed by stripping the shielding covering around the two differential transmission signal wires and the drain wire at a terminal part of the electrical cable;

a heat-shrink tube covering a portion of the shielding covering and exposed area, except for a front end portion of the differential transmission signal wires and the drain wire, so that the equal distances between the differential transmission signal wires and the [signal] drain wire inside the shielding covering are maintained in the exposed area by the heat-shrink tube.

6. (Twice Amended) A method for terminating an electrical cable, the method comprising:

stripping a shielding covering over a given length from an end portion of two differential transmission signal wires and a drain wire at a terminal part of the electrical cable;

covering an area around the two differential transmission signal wires and the drain wire that are exposed by stripping with a heat-shrink tube to maintain the [signal] drain wire at an equal distance from the two differential transmission signal wires to maintain impedance of the stripped wires; and

exposing the front end portions exposed by the stripping of the differential transmission signal wires and the drain wire.

7. (Amended) The electrical cable of Claim 1, wherein the differential transmission signal wires and the [signal] drain wire are twisted together inside the shielding covering.

8. (Amended) The electrical cable of Claim 1, wherein the [signal] drain wire is a single wire.

10. (Amended) The electrical cable of Claim 3, wherein the [signal] drain wire contacts the aluminum foil.

11. (Amended) The electrical cable of Claim 1, wherein the front end portion of the differential transmission signal wires are disposed on a first side of a circuit board and the [signal] drain wire is disposed on a second side of the circuit board.

12. (Amended) The electrical cable of Claim 11, wherein the [signal] drain wire is disposed at an intermediate point between the differential transmission signal wires.

14. (Amended) The method of Claim 6, further comprising attaching the differential transmission signal wires to a first side of a circuit board and attaching the [signal] drain wire to a second side of the circuit board.

15. (Amended) The method [electrical cable] of claim 14, wherein the [signal] drain wire is attached at an intermediate point between the differential transmission signal wires.

16. (Amended) An electrical cable terminal part, comprising:

an electrical cable having a [signal] single drain wire and differential transmission signal wires with a differential impedance, and a stripped end exposing an outer surface of the wires; and

a tube positioned over a portion of the electrical cable and a portion of the outer surface of the wires that maintains the differential impedance of the wires having an exposed outer surface.

17. (Amended) The electrical cable terminal part of Claim 16, wherein the [signal] drain wire is disposed at an equal distance from the differential transmission signal wires.